DOCUMENT RESUME

ED 341 677 SP 033 568

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TITLE Building a Knowledge Base Using the Computer To Respond to Information Processing Tasks of the NCATE Review.
PUB DATE Jan 92
NOTE 12p.
PUB TYPE Reports - Descriptive (141)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Course Descriptions; *Database Management Systems; *Databases; Evaluation Criteria; Faculty; Higher Education; *Information Processing; *Management Information Systems; Program Descriptions; *Program Evaluation; Resumes (Personal); *Teacher Education Programs
IDENTIFIERS Knowledge Bases; *National Assn for Accreditation of Teacher Educ

ABSTRACT

This paper describes an approach to information processing developed by Wayne State University (Detroit, Michigan) prior to a School of Education accreditation review by the National Association for the Accreditation of Teacher Education (NCATE). Information was needed to provide persuasive evidence in response to each NCATE criterion. The information processing task included building a data base, selecting a search and retrieval system, and testing the entire system with faculty and administration prior to arrival of the reviewers. The data base consisted of four components: (1) course syllabi; (2) faculty resumes; (3) a description of all programs; and (4) instructional program documentation. The focus of this discussion is on: technical information with respect to entering data into the computer; information processing tasks; text analysis using the Basic Information Retrieval System (BIRS); and the writing of original computer programs. Five tables are appended: (1) Topics Included in the Common Format Used for All Course Syllabi; (2) Selected Topics Included in the Common Format for the Faculty Resume; (3) Common Format Used To Describe Programs Offered by College; (4) Format Used for Instructional Program Documentation; and (5) Terms Selected from NCATE Criterion #20 and Used in BIRS. (LL)

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ED341677

Building a Knowledge Base Using the Computer to Respond to Information Processing Tasks of the NCATE Review

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SP033 568

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BUILDING A KNOWLEDGE BASE USING THE COMPUTER TO RESPOND TO INFORMATION PROCESSING TASKS OF THE NCATE REVIEW

A major part of preparing for an accreditation review by the National Association for Accreditation of Teacher Education (NCATE) is concerned with collecting information about the unit's programs, describing those elements in clear prose, and establishing the capacity to provide persuasive evidence in response to each NCATE criterion. It is primarily an information processing task, which includes building a suitable data base, selecting an appropriate search and retrieval system, and testing the entire system with faculty and administration prior to arrival of the NCATE team of reviewers.

During 1989 and 1990, the faculty and administration of the College of Education at Wayne State University assembled documents and defined procedures which would be used to respond to the challenging tasks of an accreditation review by NCATE as well as the Michigan Department of Education and an internal review by colleagues at the University. We believe that this brief description of our approach to the information processing task may be helpful to faculty in other colleges who are preparing for similar reviews.

Major Components in Data Base We believe that the course syllabi provide the primary indicators of the knowledge base which is in place at the institution. We have insisted that all courses offered by the College be described using a common format which is illustrated in Table 1. It contains the essential elements to describe a course and information which students are entitled to know before the course begins.

For each course, the syllabus must state the course objectives, the class assignments or activities, the basic text required, suggested references, and the process of evaluation and grading which the instructor will use. As shown in Table 1, the syllabus should also provide a schedule of topics to be considered in class, class policies, and office hours maintained by the instructor.

Faculty resumes in a common format constituted the second component in our data base. In addition to the name, highest degree completed, classes taught, and similar personnel information, we needed information as to their recent publications in refereed journals, in books or chapters written, invited speeches at local, national or international forums. The faculty resume format shown in Table 2 includes these items as well as information about the professional services of the faculty member in college, university, professional organizations, and public agencies.

A third component in our data base included a common format for the description of all programs offered by the College. We made the assumption that programs had long-range goals to be achieved; and courses included short-range, specific objectives which students were expected to achieve within a given semester. Each program description included a matrix of the courses required for the program and the corresponding program goals to which each course contributed. Table 3 illustrates the major elements in the common format for each program description.

Finally, the fourth component in the data base included instructional program documentation which provided evidence of the accomplishments or circumstances which influenced the programs, students, faculty or administration of the College. This category included items such as minutes of committee meetings, memos or letters from the Dean or President or professional association, reports of student opinionnaires or follow-up studies, curriculum committee recommendations, and other documents which might pertain to any of the 92 criteria in the NCATE standards. Each document was placed into a numbered folder and the number was entered into the computer file with title, author, date, agency or department which produced the document. Table 4 illustrates typical entries in the program documentation file. Often the "TITLE" field was expanded to include phrases, topics or major headings in the document which could enhance the identification and retrieval of documents relative to a concept or topic stated in one of the NCATE criteria.

Data Entry Into Computer It was decided that the data base would be established on the Wayne State University mainframe, which provided us with powerful options for word processing, mass editing of files and sorting routines which could not be duplicated with even the impressive microcomputing systems available from IBM or Apple. Faculty members may develop their program folios using either IBM or Macintosh microcomputer; and we can download their final version to a text file on the WSU mainframe. Finally, the University Computing Center maintains a daily backup of the system so that the likelihood of losing all or part of the data base was minimized.

The accumulation of more than 100 resumes for full-time or part-time faculty and administrators amounted to more than 600 pages of computer text. Descriptions of 50 instructional programs, 400 course syllabi, and 800 entries in the instructional program documentation have produced a data base with more than 9000 pages of computer text. Furthermore, the data base is changing as faculty extend their professional activities, programs or courses are altered, and new requirements for certification are established by local, state and federal agencies.

Information Processing Tasks We used a word processor on the WSU mainframe which was easy for student assistants to learn and use. With the mainframe computing resources, we can quickly produce laser printer quality output for review or editing by faculty or administrators. This means that a high quality of printing can produce the resumes of all faculty and administrators overnight or the complete set of course syllabi can be printed in the same time.

For text analysis, we used the Basic Information Retrieval System (BIRS) which was developed by Vinsonhaler(1970). In a typical application, we selected key terms or expressions from the NCATE criteria and used BIRS to find specific courses or documents which satisfied all or part of a criterion. Table 5 illustrates the relationship between the terms in NCATE Criterion #20 and a search of the "objectives" fields of all course syllabi. Using BIRS we scanned the objectives of all courses offered by the College and searched for

those courses which indicated that "independent thinking" or "effective communication" or "ethics" were ever mentioned in any course syllabus. In a similar fashion, we identified other key terms in other NCATE criteria and attempted to find those required/elective courses or parts of programs which stated that the concepts or competencies were to be achieved in a particular course or program.

Since the information in each component is maintained in a common format, we can write original computer programs to answer questions or to provide information requested by NCATE. For example, one of the requirements of NCATE is that the institutional report must be accompanied by a two-page resume to describe each faculty member teaching in the education program. Using the existing collection of faculty resumes, we wrote a simple FORTRAN program to scan and select those categories of information which NCATE required, e.g., highest degree, courses taught, recent publications and areas of research, from the large collection of faculty resumes in the data base. A two-page summary was prepared and sent to each faculty member for review, revisions or corrections.

In conclusion, we support the accreditation process which compels us to describe our professional education programs according to standards and to provide evidence of our practices. Although it is an awesome information processing task, the computer can be used to store, search, and retrieve information directly related to the criteria specified for the review.

Perhaps the major benefit of this system will be to provide us with an opportunity to use the knowledge base and computer system for **future** curriculum planning, after the impetus of accreditation review has diminished. The system can be used to identify unnecessary duplication or serious omissions of course objectives, and to introduce and track innovative practices in professional education or general education. This application of the computer to the information processing tasks of curriculum planning illustrates a process suggested by the writer several years ago (Smith, 1963). It entails a major learning process for faculty and administration; and the slope of their learning curve over time will probably be slow to rise and the experience will be arduous.

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Table 1

Topics Included in the Common Format Used for All Course Syllabi

Program Area: .....

Course Title: .....

Credit Hours: .....
Term/Year: .....
Course Location: .....
Time Course Meets: .....

Instructor's Name: .....
Office Location - .....
Office Hours - .....
Office Phone - .....

Course Description: (description from University Bulletin)

Course Objectives: (list each objective separately)

Required Text: (author, title, available in WSU Bookstore)

References: (bibliography of supplementary books, journals)

Assignments: (cite specific tasks and due dates)

Evaluation and Grading: (examinations, weighting, papers)

Class Policies: (class attendance, make-up examinations, ...)

Schedule: (topics to be considered each week throughout the semester)

Table 2

Selected Topics Included in the Common Format for the Faculty Resume

NAME: (last name, first name) Date Prepared: (month, year)

Social Security No.

Office Address: Office Phone:

RANK: (present rank, date achieved)

FACULTY APPOINTMENTS AT OTHER INSTITUTIONS:

PROFESSIONAL SOCIETY MEMBERSHIPS:

HONORS/AWARDS (list award title, institution making award, dates)

BIOGRAPHICAL CITATIONS: (list citations in national, regional or professional directories)

EDUCATION: (name and date of graduation from high school)

(institution and date of award of bachelor and graduate degrees)

TEACHING: (list courses taught at Wayne State during past five years)

(list doctoral dissertations or masters projects directed during past five years)

(list new course development or other curriculum development activities)

(list curriculum materials developed and indicate published or unpublished)

RESEARCH: (list research projects underway, but not funded at this time)

(list research projects funded during past five years - agency, amount, dates)

(list fellowship or other special awards during past five years)

PUBLICATIONS: (list scholarly books published as author or co-author)

(list chapters published as author or co-author)

(list editorship of books or conference proceedings)

(list journal articles published in refereed journals or in conference proceedings)

(list abstracts published in academic journals, book reviews published)

(list articles or papers in non-refereed journals)

(list creative shows or exhibits which are refereed at national, regional, local competition)

(list textbooks, study guides, other instructional material formally published)

(list papers presented at invited or refereed for internatiional or national conferences)

(list papers presented at invited or refereed for regional or local conferences)

SERVICE: (list administrative appointments at Wayne State during last five years)

(list University committees chaired, University committee membership and dates)

(list College committees chaired, College committee membership and dates)

(list positions held in professional associations in last five years)

(list positions held in public or private agencies related to discipline during past five years)

(list professional consultation , expert testimony before public bodies)

(list professional journal editorships, editorial board membership)

Table 3

Common Format Used to Describe Programs Offered by College

Program Area: ..... Program Coordinator .....

Check Levels at Which Program is Offered:

..... Masters Degree ..... Specialist Certificate

..... Post-Master's Level ..... Doctorate

1. INTRODUCTION
   - A. Need for Program(s)
   - B. Career Paths

   (Include all programs at all levels.)

2. KNOWLEDGE BASE

   Philosophical Basis for Program
   Assumptions and Values Implicit in Program
   Relationship to College Theme
   Theory

3. GOALS OF DEGREE PROGRAM(S) (list by degree level and reference)

4. STUDENTS' COURSE(S) OF STUDY (list by degree level)

5. MATRIX SHOWING RELATIONSHIP OF THE COURSES TO THE PROGRAM GOALS

6. DESCRIPTION OF FIELD EXPERIENCES (list by degree level)

7. LIST OF FACULTY WITH PRIMARY RESPONSIBILITY IN THIS PROGRAM AREA

8. LIST OF REQUIRED COURSES IN MATRIX

   (include list of appropriate electives for which there is a forced choice.)

9. PLEASE ATTACH COURSE SYLLABI FOR ALL REQUIRED AND FORCED-CHOICE ELECTIVE COURSES

Table 4

Format Used for Instructional Program Documentation

*$ABSTRACT	611
*AUTHOR	WILLIAM MARTIN, DEPUTY PROVOST
*TITLE	APPOINTMENTS TO THE KING/CHAVEZ/PARKS PROGRAM VISITING SCHOLARS WITHIN THE STATE-SUBSIDIZED PROGRAM FOR MINORITY STUDENTS AND FACULTY
*SOURCE	WAYNE STATE PROVOST'S OFFICE
*DATE	MARCH 12, 1990
*NUMBER	1836
*$ABSTRACT	617
*AUTHOR	DAVID ADAMANY, PRESIDENT, WAYNE STATE UNIVERSITY
*TITLE	COPYING OF COMPUTER SOFTWARE PROGRAMS POLICY-MAKING BY THE PRESIDENT EXECUTIVE ORDER 86-1
*SOURCE	OFFICE OF THE PRESIDENT, WAYNE STATE, FAB
*DATE	FEBRUARY 11, 1986
*$ABSTRACT	618
*AUTHOR	HOLMES GROUP
*TITLE	TOMORROW'S SCHOOLS PRINCIPLES FOR THE DESIGN OF PROFESSIONAL DEVELOPMENT SCHOOLS
*SOURCE	THE HOLMES GROUP, EAST LANSING, MI 4424-1034
*DATE	1990
*NUMBER	1843
*$ABSTRACT	635
*AUTHOR	FRED ATTEBURY
*TITLE	SECONDARY EDUCATION SUB-COMMITTEE CHARGED WITH RESPONDING TO DEAN'S CURRICULAR INITIATIVES PROPOSED UNDERGRADUATE SECONDARY CERTIFICATION CORE OF COMMON KNOWLEDGES AND EXPERIENCES
*SOURCE	COLLEGE OF EDUCATION
*DATE	JUNE 20, 1989
*NUMBER	1865

Table 5

Terms Selected from NCATE Criterion and Used in BIRS Search Query

NCATE Criterion #20: "Courses and experiences support the development of independent thinking, effective communications, the making of relevant judgements, professional collaboration, effective participation in the educational system, the discrimination of values in the educational arena, and professional ethics." (1990, p. 48)

BIRS Search Query:

```
*$DFSP
*$DELIMITER IS *
*$SYNONYMS
THINKING (REASONING, THOUGHT, REFLECT)
INDEPENDENT (ORIGINAL, CRITICAL), EFFECTIVE (EFFICIENT)
COMMUNICATION (SPEAK, WRITE, TALK, EXPLAIN, LECTURE)
*$QUERY
INDEPENDENT .AND. THINKING
*$QUERY
EFFECTIVE .AND. COMMUNICATION
*$QUERY
ETHICS
*$FINISH
```

Results of Search Query:

```
*$IFRP
*$QUERY
INDEPENDENT .AND. THINKING
5 ANSWERS FOUND
*$QUERY
EFFECTIVE .AND. COMMUNICATION
11 ANSWERS FOUND
*$QUERY
ETHICS
4 ANSWERS FOUND
*$END
```